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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,136	12/01/2003	Axel Buerke	INF-118	1208

25962 7590 11/16/2005

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EXAMINER	
VU, HUNG K	

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 11/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/724,136	BUERKE ET AL.	
	Examiner	Art Unit	
	Hung Vu	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24,28 and 29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *24,28 and 29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Request for Continued Examination

1 A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants 'submission filed on 09/30/05 has been entered. An action on the RCE follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 24, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (PN 6,503,788) in view of Nagabushnam et al. (PN 5,888,588, of record). Yamamoto discloses, as shown in Figure 4E, a transistor comprising:

a semiconductor body (3,4);

a source (17,18) disposed in the semiconductor body;

a drain (17,18) disposed in the semiconductor body and spaced from the source by a channel;

a gate dielectric (12) overlying the channel;

a polysilicon layer (6) overlaying the gate dielectric;

a barrier layer (10) overlying and in physical contact with the polysilicon layer;

a gate conductor (8) overlying and in physical contact with the barrier layer, the gate conductor being tungsten metal.

Yamamoto discloses the barrier layer comprising a single layer of WN_x. Yamamoto does not disclose x is a constant value between 0.3 and 0.5. However, Nagabushnam et al. discloses a transistor comprising a barrier layer comprises a single layer of WN_x, wherein x is a constant value between 0.3 and 0.5. Note Figure 7 of Nagabushnam et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the barrier layer of Yamamoto having the x value between 0.3 and 0.5, such as taught by Nagabushnam et al. in order to reduce the resistivity of the barrier so the operating speed of the transistor will be improved.

Regarding claim 28, Yamamoto and Nagabushnam et al. disclose the barrier layer has a thickness in the range of 5 to 15 nm (within the range of 1 to 50 nm).

Regarding claim 29, Yamamoto discloses, as shown in Figure 4E, a transistor gate stack formed of layers comprising:

a conductive polysilicon layer (6);

a solitary barrier layer (10) overlying and in physical contact with the conductive polysilicon layer;

a conductor layer (8) made of tungsten (W) overlying and in physical contact with the barrier layer to form the gate electrode of the transistor.

Yamamoto discloses the barrier layer comprising a single layer of WN_x. Yamamoto does not disclose x is a constant value between 0.3 and 0.5. However, Nagabushnam et al. discloses a transistor comprising a barrier layer comprises a single layer of WN_x, wherein x is a constant value between 0.3 and 0.5. Note Figure 7 of Nagabushnam et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the barrier layer of Yamamoto having the x value between 0.3 and 0.5, such as taught by Nagabushnam et al. in order to reduce the resistivity of the barrier so the operating speed of the transistor will be improved.

Response to Arguments

3. Applicant's arguments with respect to claim 24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Tuesday to Friday 6:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272 - 1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vu

November 10, 2005

Hung Vu

Primary Examiner